

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) An apparatus comprising:
a plurality of motors coupled to a single drive shaft disposed through a center portion of said plurality of motors,
a plurality of motor control devices coupled to the plurality of motors, and
a first bearing set and a second bearing set each coupled to the motors and the shaft, each of the plurality of bearing sets including a plurality of bearings arranged circularly, said first bearing set and said second bearing set sharing a common rotating sleeve disposed between said first bearing set and said second bearing set, said first bearing set coupled to another rotating sleeve, where said common rotating sleeve and said another rotating sleeve are coupled with a frangible link,
wherein the plurality of motors, the plurality of motor control devices and the plurality of bearings continue to control the shaft rotation speed upon failure of one of the plurality of motors, the plurality of motor control devices, and the plurality of bearings.
2. (Original) The apparatus of claim 1, further comprising:
a bearing failure detection device coupled to the shaft.
3. (Original) The apparatus of claim 1, further comprising:
a fan blade coupled to a hub and the shaft,
a housing coupled to the plurality of motors, and
a heat sink coupled to the housing.
4. (Original) The apparatus of claim 1, wherein the plurality of motors each rotate in one of a same direction and an opposite direction.
5. (Cancelled)
6. (Currently Amended) The apparatus of claim-51, further comprising one of a bushing, a bushing and a third bearing set, and a third bearing set.
7. (Cancelled)

8. (Previously Presented) The apparatus of claim 2, wherein the bearing failure detection device includes an optical emitter/receiver device, the optical emitter/receiver device transmits signals to a circuit, the transmitted signals include rotation information.
9. (Original) The apparatus of claim 8, wherein the rotation information includes information of rotational speed from one of the shaft, the plurality of bearings, and the shaft and the plurality of bearings.
10. (Previously Presented) The apparatus of claim 2, wherein the bearing failure detection device includes at least one strain gauge device, the strain gauge device transmits signals to a circuit, the transmitted signals include information on a failing bearing of the plurality of bearings.
11. (Original) The apparatus of claim 1, wherein the plurality of motors each having at least one pair of bifilar windings.
12. (Original) The apparatus of claim 11, wherein each of a plurality of single electrical pads are coupled to the at least one pair of bifilar windings and the plurality of motor control devices are each coupled to one of the plurality of single electrical pads.
13. (Original) The apparatus of claim 11, wherein each of a plurality of pairs of electrical pads are coupled to the at least one pair of bifilar windings, and at least two motor control devices of the plurality of motor control devices are coupled in parallel a single pair of the plurality of pairs of electrical pads.

Claims 14-23 (Cancelled)

24. (Currently Amended) A fan system comprising:
a plurality of motors coupled to a single drive shaft disposed through a center portion of said plurality of motors,
a plurality of motor control devices coupled to the plurality of motors,
a first bearing set and a second bearing set each coupled to the motors and the shaft, each of the plurality of bearing sets including a plurality bearings arranged circularly, said first bearing set coupled to a first rotating sleeve, and said second

bearing set ~~sharing a common coupled to a second rotating sleeve~~
~~disposed between said first bearing set and said second bearing set, where said first~~
rotating sleeve and said second rotating sleeve are coupled with a frangible link,

a bearing failure detection device coupled to the shaft,

a fan blade coupled to a hub and the shaft,

a housing coupled to the plurality of motors, and

a heat sink coupled to the housing,

wherein the plurality of motors, the plurality of motor control devices and the plurality of bearings continue to rotate the fan blade upon failure of one of the plurality of motors, the plurality of motor control devices, and the plurality of bearings.

25. (Original) The fan system of claim 24, wherein the plurality of motors each rotate in one of a same direction and an opposite direction.

26. (Cancelled)

27. (Currently Amended) The fan system of claim ~~26~~24, further comprising one of a bushing and a third bearing set, a bushing and a third bearing set, and a third bearing set.

28. (Original) The fan system of claim 24, wherein the bearing failure detection device includes an optical emitter/receiver device, the optical emitter/receiver device transmits signals to a circuit, the transmitted signals include rotation information.

29. (Original) The fan system of claim 24, wherein the plurality of motors each having at least one pair of bifilar windings.

30. (New) An apparatus comprising:

a plurality of motors coupled to a single drive shaft disposed through a center portion of said plurality of motors,

a plurality of motor control devices coupled to the plurality of motors,

a first bearing set and a second bearing set each coupled to the motors and the shaft, each of the plurality of bearing sets including a plurality of bearings arranged

circularly, said first bearing set and said second bearing set sharing a common rotating sleeve disposed between said first bearing set and said second bearing set,

a fan blade coupled to a hub and the shaft,

a housing coupled to the plurality of motors,

a heat sink coupled to the housing and to a multi-processor,

wherein the plurality of motors, the plurality of motor control devices and the plurality of bearings continue to control the shaft rotation speed upon failure of one of the plurality of motors, the plurality of motor control devices, and the plurality of bearings.

31. (New) The apparatus of claim 30, further comprising:

a bearing failure detection device coupled to the shaft.

32. (New) The apparatus of claim 30, wherein at least another sleeve is coupled to the plurality of bearings where the sleeves are coupled with a frangible link.

33. (New) The apparatus of claim 31, wherein the bearing failure detection device includes an optical emitter/receiver device, the optical emitter/receiver device transmits signals to a circuit, the transmitted signals include rotation information.

34. (New) The apparatus of claim 31, wherein the bearing failure detection device includes at least one strain gauge device, the strain gauge device transmits signals to a circuit, the transmitted signals include information on a failing bearing of the plurality of bearings.

35. (New) An apparatus comprising:

a plurality of motors coupled to a single drive shaft disposed through a center portion of said plurality of motors,

a plurality of motor control devices coupled to the plurality of motors,

a bearing failure detection device coupled to the shaft, and

a first bearing set and a second bearing set each coupled to the motors and the shaft, each of the plurality of bearing sets including a plurality of bearings arranged circularly, said first bearing set and said second bearing set sharing a common rotating sleeve disposed between said first bearing set and said second bearing set,

wherein the plurality of motors, the plurality of motor control devices and the plurality of bearings continue to control the shaft rotation speed upon failure of one of the plurality of motors, the plurality of motor control devices, and the plurality of bearings, and wherein the bearing failure detection device includes an optical emitter/receiver device, the optical emitter/receiver device transmits signals to a circuit, the transmitted signals include rotation information.

36. (New) The apparatus of claim 35, wherein at least another sleeve is coupled to the plurality of bearings where the sleeves are coupled with a frangible link.

37. (New) The fan system of claim 35, wherein the plurality of motors each rotate in one of a same direction and an opposite direction.

38. (New) An apparatus comprising:

- a plurality of motors coupled to a single drive shaft disposed through a center portion of said plurality of motors,

- a plurality of motor control devices coupled to the plurality of motors,

- a bearing failure detection device coupled to the shaft, and

- a first bearing set and a second bearing set each coupled to the motors and the shaft, each of the plurality of bearing sets including a plurality of bearings arranged circularly, said first bearing set and said second bearing set sharing a common rotating sleeve disposed between said first bearing set and said second bearing set, wherein the plurality of motors, the plurality of motor control devices and the plurality of bearings continue to control the shaft rotation speed upon failure of one of the plurality of motors, the plurality of motor control devices, and the plurality of bearings, and wherein the bearing failure detection device includes at least one strain gauge device, the strain gauge device transmits signals to a circuit, the transmitted signals include information on a failing bearing of the plurality of bearings.

39. (New) The apparatus of claim 38, wherein at least another sleeve is coupled to the plurality of bearings where the sleeves are coupled with a frangible link.

40. (New) The fan system of claim 38, wherein the plurality of motors each rotate in one of a same direction and an opposite direction.

41. (New) A fan system comprising:

- a plurality of motors coupled to a single drive shaft disposed through a center portion of said plurality of motors,

- a plurality of motor control devices coupled to the plurality of motors,

- a first bearing set and a second bearing set each coupled to the motors and the shaft, each of the plurality of bearing sets including a plurality bearings arranged circularly, said first bearing set coupled to a first rotating sleeve,

- a bearing failure detection device coupled to the shaft, the bearing failure detection device includes an optical emitter/receiver device, the optical emitter/receiver device transmits signals to a circuit, the transmitted signals include rotation information,

- a fan blade coupled to a hub and the shaft,

- a housing coupled to the plurality of motors, and

- a heat sink coupled to the housing,

wherein the plurality of motors, the plurality of motor control devices and the plurality of bearings continue to rotate the fan blade upon failure of one of the plurality of motors, the plurality of motor control devices, and the plurality of bearings.

42. (New) The fan system of claim 41, said second bearing set coupled to a second rotating sleeve, where said first rotating sleeve and said second rotating sleeve are coupled with a frangible link.

43. (New) The fan system of claim 41, wherein the plurality of motors each having at least one pair of bifilar windings.

44. (New) A fan system comprising:

- a plurality of motors coupled to a single drive shaft disposed through a center portion of said plurality of motors,

- a plurality of motor control devices coupled to the plurality of motors,

a first bearing set and a second bearing set each coupled to the motors and the shaft, each of the plurality of bearing sets including a plurality bearings arranged circularly, said first bearing set coupled to a first rotating sleeve,

a bearing failure detection device coupled to the shaft, the bearing failure detection device includes at least one strain gauge device, the strain gauge device transmits signals to a circuit, the transmitted signals include information on a failing bearing of the plurality of bearings,

a fan blade coupled to a hub and the shaft,

a housing coupled to the plurality of motors, and

a heat sink coupled to the housing,

wherein the plurality of motors, the plurality of motor control devices and the plurality of bearings continue to rotate the fan blade upon failure of one of the plurality of motors, the plurality of motor control devices, and the plurality of bearings.

45. (New) The fan system of claim 44, said second bearing set coupled to a second rotating sleeve, where said first rotating sleeve and said second rotating sleeve are coupled with a frangible link.

46. (New) The fan system of claim 44, wherein the plurality of motors each having at least one pair of bifilar windings.